CERTIFICATION OF TRANSLATION

I, Yoshie Takahashi of 3-8 Suge 1-chome, Tama-ku, Kawasaki-shi, Kanagawa, Japan, declare that I know well both the Japanese and English languages; that I translated the attached Japanese priority document 11-233655 from Japanese to English; that the attached English translation is a true and correct translation of the document attached thereto to the best of my knowledge and belief.

Date: November 9, 2005 By: Yoshie Takahashi

[Document] Specification

[Title of the Invention] SERVICE MANAGING SYSTEM

[What is claimed is:]

1. A service managing system comprising:

table top terminals for enabling customers to view contents of service items and to order desired items, and being portable and driven by a battery;

order-receiving terminals receiving and indicating orders from the table top terminals;

an accounting unit casting accounts in response to a customer's request and indicating a calculated result; and

a store control unit processing data between the table top terminals, order-receiving terminals and an accounting unit;

wherein data are transmitted and received using radio communications between the table top terminals, order-receiving terminals, accounting unit and store control unit.

2. The service managing system of claim 1, further comprising worktable terminals indicating a table to be served in response to the information representing the cooked dishes.

3. The service managing system of claim 1 further comprising a guide display indicating at least vacant tables.

4. The service managing system of claim 3, wherein the guide display also indicates routes to vacant tables and usable time thereof.

5. The service managing system of any one of claim 1,2, 3 or 4, wherein a personal handy phone system (PHS) is used to exchange data and enable verbal communications.

6. The service managing system of claim 1 or 2, wherein visual indications of new menus or commercials are transmitted from a head office to the table top terminals for the purpose of updating existing data.

7. The service managing system of claim 1, wherein the table top terminal is a flat display panel for enabling customers to view menus.

8. The service managing system of claim 1, wherein the table top terminal is provided on each table.

9. The service managing system of claim 2 or 3, wherein it is possible to recognize names of employees operating terminals and identification numbers of the operated terminals.

10. The service managing system of claim 1 or 2, wherein names and time of employees operating respective terminals, and items input thereon are recorded.

11. The service managing system of claim 1 or 2, wherein table top terminals or counter top terminals are used at a counter.

[Detailed Description of the Invention]

[0001]

[Field of the Invention]

The present invention relates to a service managing system which enables management of customers' orders not only at eating houses such as restaurants, family restaurants, saloons and fast food stores and so on when customers visit the foregoing places and leave there. The invention more particularly relates to a service managing system in which various pieces of information are exchanged using radio communications between terminals and various devices.

[0002]

[Description of the Related Art]

Various attempts have been made in order to electronically process data concerning customers' ordered dishes, payment, food serving arrangement in a variety of eating houses such as restaurants, thereby improving management of service procedures and quality of service offered to customers.

[0003]

Japanese Patent Laid-Open Publication No. Sho 49-017944 describes an order managing system in which information on customer's order is

electronically processed by an employee who receives the order in a restaurant or the like in order to accomplish laborsaving.

[0004]

Japanese Patent Laid-Open Publication No. Sho 51-040995 discloses a restaurant managing system in which a customer input an order using a table top computer in order to shorten time for preparing ordered dishes, and to accomplish laborsaving.

[0005]

Further, Japanese Patent Laid-Open Publication No. Sho 58-137076 describes a restaurant managing system. With the described system, data entered by customers using table top order terminals are processed by a central processing unit, and are transferred to kitchen and worktable terminals. On the basis of the data, the ordered dishes are efficiently prepared and delivered to the customers, and customers' accounts will be processed without errors.

[0006]

Japanese Patent Laid-Open Publication No. Sho 59-194262 relates to a restaurant service managing system. Customers operate table top panels in order to order their desired dishes directly to cooks, which is effective in preventing problems related to delivery of cooked dishes, negating issuance of account slips, and improving services offered to the customers.

[0007]

Japanese Utility Model Laid-Open Publication No. Sho 61-180347 describes a table top ordering panel, which is operated by a customer to order his or her desired dishes on the basis of a program stored in a memory. This negates the use of menus, and streamlines services offered in a restaurant or the like.

[0008]

Japanese Patent Laid-Open Publication No. Sho 58-137077 discloses a service managing system for a restaurant, in which worktable terminals

are of a wire-less type and carried by waiters or waitresses (hereinafter called the "employees"), and dishes to be delivered is notified to a CPU using radio communications, thereby reducing load applied to the employees by dispensing with the installation of transmission cables, and facilitating reform of the restaurant.

[0009]

Japanese Utility Model Laid-Open Publication No. Sho 61-070278 describes an order-and-account managing system for use in a restaurant, in which customers order their desired dishes using table switches of table top receivers, sheet switches or ordering switches, and data on the ordered dishes are visually indicated on a kitchen display. This cuts out employees taking orders, and overcomes problems related to ordered contents or table numbers, and so on.

[0010]

Japanese Utility Model Laid-Open Publication No. Sho 63-179557 relates to a visual menu order system with a touch sensor. The system includes table top terminals provided with a radio transmitter and used to enter desired dishes by customers, an accounting machine selectively receiving data on ordered dishes and making up them, and a printer provided in a kitchen in order to print the data. The system is reliably compatible any table layout modifications.

[0011]

Japanese Patent Laid-Out Publication No. Hei 8-263561 describes a cashless restaurant managing system. The system enables restaurant services to be offered to customers who are not required to pay cash but can pay using cash cards, magnetic card, IC cards, loan cards, credit cards or the like.

[0012]

Japanese Patent Laid-Open Publication No. Hei 7-028887 describes an ordering terminal system in which ordering terminals are directly

operated by customers in order to order desired dishes or goods. The system improves services offered to the customers by informing them of their waiting times and so on, reduces employment cost, and raises a turnover rate. Further, the system promotes streamlined operations in restaurants and fast food stores through centralized information processing.

[0013]

Japanese Patent Laid-Open Publication No. Hei 8-044,798 discloses a menu ordering system, by which customers operates an ordering unit to order and confirm their desired dishes with reference to menus indicated on the ordering unit. Information entered by the customers is transmitted by a wire or radio communication network. The system is effective in reducing the employee cost, and in enabling customers to review menus and determine their desired dishes.

[0014]

[Problems to be solved by the Invention]

Existing service managing systems have suffered from the following problems when customers order their desired dishes themselves using wireless order terminals.

First of all, wiring is required in order to supply AC power. Further, a body of a store control unit is very large, gets in the gangways in the restaurant, and is very expensive.

The foregoing systems are based on a serial communication processing method using a single radio wave, so that customers have to wait when many wireless order terminals are simultaneously in operation.

The wireless order terminals are so large that they cannot be brought to tables occupied by customers, and are difficult for the customers to handle.

Since laser disc units are used, they have to be respectively set again each time menus are updated, or when new commercial messages are offered.

Those systems might be effective in improving service offered to

customers if customers can operate order terminals in order to call a store clerk, a waiter or a waitress, or if it is possible to automatically recognize customers' states and notify them to store clerks, employees who are ready to serve the customers before they are called. Unfortunately, this kind of function has not been incorporated in service managing systems of the related art. Further, no communications are electronically established between customers and store clerks, waiters or waitresses who are far from one another, and between store clerks, waiters, waitresses, cooks, and other members of the store or restaurant.

In addition, the order terminals are embedded in tables, and are not visible when ordered dishes are placed on the tables.

[0015]

A system where customers order their desired dishes by themselves using a portable wireless order terminal has the following problem.

It is impossible to correlate the data input by customers using order terminals and data displayed on terminals carried by employees since the customer's table location is not known. Therefore, it takes time for them to reliably check the dish delivery data at respective positions.

Information such as visual menus or updating information having a large volume cannot be transmitted in bulk from central equipment in a store or a head office to respective branch offices.

Further, customers may not enjoy operating order terminals.

Customers at a counter cannot directly order dishes by themselves since order terminals are not provided at the counter.

[0016]

The present invention is intended to provide a service managing system for stores or eating houses such as restaurants, which can overcome the foregoing problems of the related art.

With the service managing system of the invention, data are exchanged between all the terminals and various units using radio

communications. The terminals are portable and driven by batteries without using any AC power source. The service managing system performs overall management of services, order of menus, cooking, food serving and accounting.

The service managing system also allows verbal communications through the use of personal handy phones (hereinafter called the "PHS"), which operates on a PHS wave, consumes a reduced power, and assures reliable digital communications.

A store control unit installed in a store or restaurant transmits image information concerning new menus, commercials and so on to all the terminals, thereby updating existing data. Further, the store control unit receives common information or the like from a head office in order to update existing data.

A guide display is provided at an entrance of the restaurant or the like and visually informs customers of availability of usable tables, time for them to be seated and so on. Further, the guide display is possible to automatically respond to customers' requests, issue order tickets, and guide customers to usable tables.

Table top terminals offer color indications of items which look real and are as clear as pictures. Viewing them, customers will be able to order desired items. The table top terminals are compact and thin, and stand along side edges of tables, so that they do not disturb customers. The table top terminals can be moved so as to face customers, be brought to hem, and be handled just like conventional menus. The terminals are battery-driven and cordless type.

[0017]

When a customer operates the table top terminal in order to temporarily settle an account, this is notified to a terminal of a free, or unoccupied, employee. Then, the customer's account is transferred to an accounting section, so that the customer can pay without delay at a register.

The number of table top terminals can be increased or decreased in order to serve customers without delay by appropriately adjusting the number of wireless terminal connectors called CS (call station) units in accordance with the number of terminals and frequency of uses of the terminals depending upon a scale of the restaurant.

[0018]

The service managing system allows automatic confirmation of a flow rate of customers, and automatic consultation on the number of part-timers and personnel to be increased or decreased, which are effective in improving total management of the store or restaurant.

The management of the store or restaurant is completely automated so that it is possible to collect data on the service activities throughout the store or restaurant.

The names of employees, time and service items input on the store control unit are recorded, and are output in the form of tables. It is possible to recognize whether or not service is offered without any problem. If there is any problem, it can be easily detected, and be quickly overcome. Such data are usable as materials to evaluate the quality of service of the store or restaurant, and the efficiency ration of the employees.

Free, or unoccupied, store clerks or employees will be preferentially notified and dispatched to a customer who is operating a table top terminal.

[0019]

Guidance for delivery of cooked dish is indicated on a worktable terminal, so that an inexperienced employee can deliver the cooked dish to a specified table without any problem. Further, customers can check, on the table top terminals, the dish to be delivered, which is effective in enabling customers to be served with their desired dishes.

The service managing system can reduce manpower and improve quality of service offered to customers, so that advantages obtained by these factors can improve and refine dishes served to customers, which will

contribute to future development of restaurants or the like.

Customers at a counter can order their desired dishes using counter top terminals.

[0020]

[Means to Solve the Problems]

According to a first feature of the invention, there is provided a service managing system which includes: table top terminals enabling customers to view contents of service items and to order desired items, and being portable and driven by a battery; order-receiving terminals receiving and indicating orders from the table top terminals; an accounting unit casting accounts in response to a customer's request and indicating a calculated result; and a store control unit processing data between the table top terminals, order-receiving terminals and an accounting unit. Data are transmitted and received using radio communications between the table top terminals, order-receiving terminals, accounting unit and store control unit.

[0021]

The service managing system further includes worktable terminals indicating a table to be served in response to the information representing the cooked dishes.

The service managing system further includes comprising a guide display indicating at least vacant tables.

The guide display also indicates routes to vacant tables and usable time thereof.

[0022]

In the service managing system a personal handy phone system (PHS) is used to exchange data and enable verbal communications.

Visual indications of new menus or commercials are transmitted from a head office to the table top terminals for the purpose of updating existing data.

[0023]

The table top terminal is a flat display panel enabling customers to view menus.

The table top terminal is provided on each table.

It is possible to recognize names of employees operating terminals and identification number of the operated terminals.

Names and time of employees operating respective terminals, and items input thereon are recorded. Further, table top terminals or counter top terminals are used at a counter.

[0024]

[Description of the Embodiment]

An outline of a service managing system of the invention will be described with reference to Fig. 1.

The table top terminals 10 are prepared for respective tables 11 in a restaurant, saloon or the like. A customer can view menu and order desired dishes using the table top terminal 10. Each table top terminal 10 is a compact, thin and portable terminal having a liquid crystal panel, for example, and is driven by a rechargeable battery. The customer can view indications on the table top terminal 10 just like viewing an ordinary menu. The table top terminal 10 is placed on a table terminal receptacle 12 provided on the table 11. Further, customers can call an employee using the table top terminal 10.

[0025]

In the example shown in Fig. 1, the counter top terminals 30 and counter terminal receptacles 32 are provided at respective counter seats 31. The counter top terminals 30 are identical to the table top terminals 10. Fig. 1 shows that one counter top terminal 30 is used for a group of customers. When ordering desired dishes, customers place the counter top terminal 30 on the counter terminal receptacle 32.

[0026]

The worktable terminal 15 is provided on a worktable 14 in order to

indicate cooked but not delivered dishes as well as already delivered dishes.

Further, the kitchen terminal 16 is provided in a kitchen in order to indicate dishes before being cooked, dishes being cooked, and dishes already delivered to customers in different colors together with the employees' names, and names of the employees in different colors. The PHS terminals 22 are carried by the employees in order to allow verbal communications there between, if necessary.

[0027]

When the customer informs of payment is made either via the table top terminal 10 or the counter top terminal 30, the accounting unit 17 casts accounts and displays and counted result on the table or counter terminal 10 or 30. The guide display 18 indicates on the real time basis information concerning unavailability of vacant tables, locations of vacant tables, time required for allowing customers to be guided to vacant tables, and so on. The guide display 18 is provided with a ticket machine 19 for issuing order tickets.

[0028]

The service managing system includes: a store control unit 20; a plurality of table top terminals 10; a plurality of counter top terminals 30; at least one worktable terminal 15; at least one kitchen terminal 16; a plurality of PHS terminals 22 carried by waiters, waitresses and cooks; an accounting unit 17; and a guide display 18. The store control unit 20 exchanges various kinds of information between the foregoing terminals via CS units 21 for establishing radio communications. The number of the CS units 21 depends upon the number of the foregoing terminals. The table top terminals 10, counter top terminals 30, worktable terminal 15 and accounting unit 17 exchange data and verbally communicate one another using a personal handy phone system (PHS).

The table top terminals 10, counter top terminals 30, worktable terminals 15, kitchen terminals 16 and so on are small, thin and portable,

and are activated by battery, so that centralized battery chargers 23 are provided. The foregoing terminals will be charged whenever necessary.
[0029]

The store control unit 20 also functions as a point of sales system (called the "POS" hereinafter), is connected to a central processing system 25 at a head office via an IP network or a dedicated line, and is accessible to control systems 26 at other branch stores.
[0030]

The store control unit 20 will be described with reference to its main functions, configuration and operation.

(1) Confirmation of flow of customers

The names of the employees, time of operation of terminals and data input using terminals are recorded and transferred to the store control unit 20. The store control unit 20 totals the foregoing data, tabulates them, and indicate them in the form of tables. Referring to the tables, it is possible to check whether or not services are being normally offered, or to locate abnormal situations. Therefore, such abnormal situations can be quickly overcome. The foregoing data are usable as materials for evaluating the restaurant itself or the efficiency rating of the employees.

(2) Controlling communications between terminals

(3) Managing effective use of tables

(4) Managing activities at the kitchen

The store control unit 20 notifies the kitchen of the presence of dishes ordered but not cooked, dishes being cooked, cooked dishes, and unavailability of materials for ordered dishes.

(5) Managing delivery orders and tables to which cooked dishes are to be delivered

(6) Managing calls from customers, and

(7) Controlling exchange of data to and from the POS control center.
[0031]

Referring to Fig. 2, the store control unit 20 includes:

a control block 40;

a terminal interface circuit block 42;

a POS control system 44; and

a PCM interface 46.

The terminal interface circuit block 42 physically connects the CS units for establishing radio communications between the terminals and the control block 40. The POS control system 44 is accessible to existing POS devices. The PCM interface 46 establishes connection to public communication networks. However, the PCM interface 46 is not always indispensable in the service managing system, is an optional device, and will be provided in response to customers' requests.

[0032]

The store control unit 20 is also provided with a circuit for establishing intra-office communications between PHS terminals. A maximum of 32 CS units can be provided by expanding a pair of a terminal transmission interface gate array 48 and the terminal interface block42. This enables the store control unit 20 to communicate with the table 96 or counter top terminals 10 or 30 at the same time.

It is assumed here that direct communications are not established between the table and counter top terminals 10 and 30 although they are technically possible. Communications are basically allowed between the PHS terminals 22, between PHS terminals 22 and table top terminals 10, between the PHS terminals 22 and counter top terminals 30, and between the PHS terminals 22 and worktable terminal 15, kitchen terminal 16, and accounting unit 17.

[0033]

The control block 40 includes:

a. a switching control circuit 401 connecting the foregoing terminals in order to allow verbal and data communications there between;

b. a terminal interface gate array 48 controlling transmission and reception of information by synchronously analyzing data and verbal information transferred from the CS units via channels, and constituted by an LSI;

c. a CPU 402 controlling the whole activities in the restaurant or store;

d. a peripheral units of CPU gate array block 403 peripheral to the CPU 402 being an LSI for connecting a peripheral LSI for the CPU402;

e. an Ethernet interface 404 for establishing data communication to and from the POS control system 44 using the Ethernet system;

f. a flash ROM 405 having two program ROMs for controlling the control block 40 and a memory for storing visual data whenever there are data to be updated; and

g. a backup RAM 406 for storing information which should not be erased at the time of emergency.

[0034]

The terminal interface circuit 42 enables radio communications between the CS units 21 and the PHS terminals 22, table top terminals 10, counter top terminals 30, worktable terminal 15, kitchen terminal 16 and acounting unit 17. The terminal interface circuit 42 adopts a ping-pong interface for the communications to and from the terminals, and is connectable with two CS units. When this circuit 42 is connected in the shape of a hexagon, a maximum of 32 CS units are connectable. One CS unit enables simultaneous communications by three terminals, so that 32 CS units allow communications by 96 terminals at the same time.

[0035]

The POS control system 44 receives accounting data from the control block 40, processes the received data, and transfers them to the head office at a totaling time everyday, so that all the branch stores can be centrally managed by the head office.

Further, the POS control system 44 is also used to manage food materials in a storehouse, and automatically order to related supply centers necessary materials depending upon seasons, days of the week and so on, via a concerned network. This management work is performed using a personal computer which is connected to the head office via the IP network or a dedicated line.

[0036]

The PCM control interface 46 permits the PHS terminals to connect to outside parties via a public telephone network.

[0037]

The table top terminals 10, counter top terminals 30, worktable terminal 15, kitchen terminal 16 and guide display 18 are essentially identical and personal computers. Referring to Fig. 3, each of the foregoing terminals is mainly composed of:

a. a PC functional unit 101;
b. a PHS terminal functional unit 102;
c. a TFT liquid crystal panel 103; and
d. a battery power supply 104.

[0038]

The PC functional unit 101 functions as an ordinary personal computer, and includes the following.

PHS terminal connecting interface

The PHS terminal connecting interface permits and controls data communications between various units and terminals on the basis of a PIAFS system.

Touch panel control

The touch panel control enables data to be input on terminals by touching visual indications thereon.

Game machine interface

The game machine interface is used to connect the TFT liquid crystal

panel 103 when it is operated as a game machine monitor.

Peripheral device interface

The peripheral device interface is connected to a keyboard, a mouse, FDD, CDR or the like at the time of maintenance.

Automatic table number reader

The automatic table number reader has an interface circuit for automatically reading a table number or a counter seat number when a table or counter top terminal is placed on a terminal receptacle.

Order ticket machine 19

The order ticket machine 19 is provided with an interface to which a small printer is connected, and is attached to the guide display 18 in order to issue order tickets.

[0039]

The PHS terminal functioning part 102 controls PHS radio communications.

The TFT liquid crystal panel 103 is clearly visible when viewed slantwise, and is a touch panel.

The battery power source 104 is continuously usable for approximately 15 hours (including a battery operation saving time) once it is charged. The battery power source 104 is required to be further light in weight.

[0040]

Fig. 4 shows the configuration of the accounting unit 17 which is substantially identical to the foregoing terminals. However, the accounting unit 17 is provided at its PC function part with a LAN & RS 232C interface in order to connect with a commercial cash register 106.

[0041]

A centralized battery charging stand 23 is used to quickly and simultaneously charge batteries of ten or more terminals.

Table terminal receptacles 12 for the table top terminals 10 and

counter terminal receptacles 32 for the counter top terminals 30 are provided with number reading parts for enabling table or counter top terminal to automatically read identification numbers of the table or counter seats.

[0042]

Table top terminal 10

Each table top terminal 10 is used for the following purposes:

a. indicating menus for enabling customers to order desired dishes;

b. broadcasting commercials;

c. indicating questionnaires;

d. inviting the use of game machines;

e. offering quizzes to customers;

f. indicating how to call and communicate with employees;

g. enabling communications between employees; and

h. periodically providing current topics.

[0043]

Further, menus are further classified with respect to fish, meat, vegetables, salads, rice, noodles, Japanese foods, Italian foods, pizza, pasta, beverages, stews, soups, and so on.

It is also possible to indicate the whole menus in a hierarchical manner, or menus showing calories and nutrients and so on.

Still further, the customers can review their ordered dishes and total calories of the ordered dishes.

In addition, it is possible to indicate recommended dishes on a particular day.

The table top terminal 10 also indicates on a real time basis a proposed time of delivery of the ordered dishes, and a state of the ordered dishes waiting to be delivered.

[0044]

It is possible to indicate menus in the form which is easily understood

and ordered by children using character figures popular to them, for example. Further, menus may be prepared for children and to adults.

Payment may be made by credit cards, cash, electronic money, or electronically made via portable phones.

A total of fess for already served dishes may be indicated on the real time basis, with or without taxes.

Dishes before and after delivery are clearly indicated on the table top terminal 10.

Commercials of adjacent stores may be indicated on the table top terminal 10. Customers may view them, or stop them if they are disturbing.

Customers can call an employee via the table top terminal in case of an emergency.

It is also possible to give small presents to customers who answer questionnaires or quizzes when they make payment. Alternatively, it is possible automatically to discount customers' fees when they answer questionnaires.

[0045]

The customer can communicate with the employee using the table top terminal 10, according to a procedure specified by employees. Customers and employees can be called by a visual or verbal signal which is determined by the CS unit.

Further, the customer can view popular topics concerning health, what is best, worst and so on ,on the table top terminal 10.

In addition, it is possible to indicate goods using three-dimensional computer graphics.

[0046]

Worktable terminal 15

The worktable terminal 15 functions as follows:

a. visually indicating tables where cooked dish is to be delivered in order

to enable even part-timers or beginners can understand them;

b. permitting communications between employees;

c. enabling smooth and reliable delivery of dishes by the employees;

d. indicating tables to be cleared; and

e. protecting the worktable terminal 15 is against water and bacteria.

[0047]

Further, the worktable terminal 15 indicates cooked dish that has been delivered to customers and cooked dish that has not yet been delivered to customer. When proposed delivery of cooked dish is input on the worktable terminal 15, this is displayed in a different color on the table top terminal 10 where the cooked dish should be delivered. Therefore, it is possible to prevent delivery of dish to wrong destinations.

The order of delivery is arranged in the time series of customers' orders. Therefore, dishes are reliably delivered to customers in accordance with the order of customers' orders.

The order of delivery is indicated on the worktable terminal 15 when a button associated with the cooked dish is touched.

[0048]

Kitchen terminal 16

The kitchen terminal 16 is operated by touching or a dedicated pen and indicates:

a. non-cooked dishes, dishes being cooked and already cooked dishes for respective employees in different colors;

b. dishes being cooked or cooked dishes in response to input from the PHS terminal 22; and

c. that some of materials of dishes are out of stock in response to input from the PHS terminal 22,thereby notifying this situation to all the table top terminals. This is effective in overcoming a problem that it is necessary to request a customer to re-order dishes after materials of the ordered dishes are found to be out of

stock. This also contributes to reduction of loss time.

d. The kitchen terminal 16 is waterproof and protected against bacteria.

[0049]

Further, the kitchen terminal 16 indicates cooked dishes which are ready for delivery.

Information on materials being out of stock or dishes that cannot be served on a particular day is input in the kitchen terminal 16 using the touch panel or the like. This information is also indicated on the table top terminals 10, the counter top terminals 30 and the guide display 18, so that customers can view the most updated information.

A dish which is being cooked by one cook and the name of the cook are indicated on another kitchen terminal 16 using a particular color, so that it is possible to prevent the same dish from being prepared by a plurality of cooks.

[0050]

Guide display 18

The guide display 18 indicates:

a. availability of vacant tables and time required for enabling customers to be seated;

b. today's recommended dishes;

c. positions of vacant tables and route guidance to those tables; and

d. notifying the PHS terminals 22 that customers are being guided to vacant tables, so that employees can clear the tables before the customers arrive there, which is reported to the employee who notified a usable state of the table.

[0051]

The guide display 18 has a large display screen, which indicates today's recommended dishes, the number of occupied tables, the number and time for customers to be seated, and so on.

When the number of new customers is input, the guide display 18 indicates vacant tables according to their hierarchical order, and verbal guidance is also offered.

If all the tables are occupied and queuing is specified, the ticket machine 19 issues an order ticket. When vacant tables are available for the specified number of customers, a particular order ticket number will be verbally notified. The customers having the notified order ticket touches a specified position on the guide display 18, so that the guide display 18 indicates the position of the usable table. If there are no idle employees, it is possible to select whether or not succeeding queuing should be performed depending upon the situation.

[0052]

Accounting unit 17

The accounting unit 17 performs the following:

a. casting customers' accounts; and

b. storing information concerning kinds of customers.

When payment is informed from the table top terminal 10 or counter cop terminal 30, the accounting and appropriate data are indicated on a display screen of the accounting unit 17, and a casher issues a machine-made or handwritten receipt.

Reviewing contents of answers to questionnaires, the information concerning kinds of customers will be amended. If there has been no information with respect kinds of customers, information is input. The kinds of customers are indicated by icons representing senior citizens, males, females, children and so on. The icons are touched on the display screen. The information concerning customers is transmitted to the control unit so as to be applied to various management activities of the restaurant.

[0053]

Centralized battery charging stand 23

The centralized battery charging stand 23 takes only approximately

two hours to simultaneously charge batteries of at least ten table top terminals 10 and at least ten counter top terminals 30.

[0054]

Table terminal receptacles 23

The table terminal receptacles 23:

a. is rotatable in a direction facing customers;

b. enables a table number to be entered;

c. is able to receive AC input or be provided with a battery-charging function (which is an optional function); and

d. is able to protect the table top terminals from falling down.

[0055]

Specifically, each table terminal receptacle 12 is easily rotatable in a direction facing customers, and remains stationary at a specified position.

The table terminal receptacle 12 is provided with a switch for setting a table number.

All or some of the table terminals receptacles 12 may be operated by an AC power or be provided with the battery-charging function for the table top terminals 10.

Each table top terminal 10 and each table terminal receptacle 12 are connected using a special flexible cord having a key in order to prevent the table top terminal 10 from theft and from being broken when it falls down from the table.

[0056]

PHS terminals 22

The PHS terminals 22 performs the following:

a. issuing commands to respective terminals by verbal or visual signals;

b. featuring being light in weight and easy to handle. Employees can respond to commands without holding the PHS terminals 22 with hands, when they use ear phones and put them on arms or the like.

c. When an employee reports the store control unit 20 of his or her idle state using the PHS terminal 22, he or she will receive instructions from the store control unit 20.

Usually, the employees carry the PHS terminals 22 with ear phones so that the PHS terminals 22 are invisible to the customers. This is because customers may feel uncomfortable when they see employees using PHS terminals 22 as usual. Further, employees' voices communicating via the PHS terminals 22 may be uncomfortable to the customers.

[0057]

The service managing system operates in the following manner, as shown in flowcharts in Figs. 5 and 6, and Fig. 7. It is assumed here that there is a group of customers consisting of six adults and two elementary school children. In Figs. 5 and 6, S1, S2, ... denote operation steps. In Fig. 7, a1, a2, ... denote routes where customers move, b1, ... denote communications between terminals, c1, c2, ... denote radio communications between terminals, d1, ... denote wire communications between terminals, e1, e2, ... denote employees' movements, and f1, ... denote communications with outside parties.

[0058]

The customers get into the restaurant (step S1), and advance the route a1 to reach the guide display 18 (step S2). The customers review verbal or visual indications on the guide display 18 which shows the availability of vacant tables, waiting time, today's recommended dishes, and so on, and determine whether or not they dine there. Deciding to dine there, the customers touch a button on the guide display 18 (step S3). The guide display 18 shows a screen for selecting a table or counter. When the customers touch a table button, they are verbally or visually notified that "Please take an order ticket and wait until you receive a further announcement". At the same time, the presence of the customers is notified to PHS terminals 22 if there is a vacant table.

[0059]

In step S4, a screen for specifying the number of customers is indicated on the guide display 18. When "8" is touched and a queue button is pushed, a message "Your data are received" is indicated visually or verbally. Sometimes, an inquiry message "May we guide you to separate tables?" is issued, for example. If all the tables are occupied and if the customer wishes to wait, the ticket machine 19 issues an order ticket. Receiving the order ticket, the customers will advance to a waiting room via a route a3.

When an employee inputs data on the PHS terminal 22, his or her name is automatically entered. However, when either a pen or touch panel is used for this purpose, the employee's name should be touched on the touch panel, first of all. This holds true to the succeeding operations.

[0060]

When a table is cleared and is ready for new customers, the employee inputs "ready" state on the table top terminal 10 or the PHS terminal 22. A signal indicating the ready state is transmitted by the radio communication to the store control unit 20 via an idle CS unit 21 and a route c3 shown in Fig. 7. Further, the identification code of the table top terminal 10 is read by the table terminal receptacle 12 via a route b2, and the customers' order is processed on the basis of the identification code. The employees can always check positions of vacant tables on the guide display 18, so that they can guide customers to usable tables.

[0061]

The store control unit 20 lets via a radio route c2 the guide display 18 verbally announce "The customers having the order ticket No. XXX is requested to touch the ENTER button, and to come to No. YYY table" (step S6). The guide display 18 indicates the position of the table in question, and a select button for enabling the customers to select whether or not they receive service.

[0062]

The customers come to the guide display 18 via a route a4, and pushes the ENTER button. The guide display 18 visually indicates the route to the tables in question to guide the customers. At the same time, the guide display 18 notifies this situation to the PHS terminals 22 via a wireless route c1, wire route d1 and wireless route c5. Receiving the notification, the employee reaches and greets the customers at the tables, and serves them. In this state, the employee may join the two tables if they wish. Then, the employee asks whether the customers' orders may be settled in a bulk. If so, the customers using No. 1 table top terminal 10 and those using No. 2 table top terminal 10 will be set as one group using the PHS terminal 22.

The guide display 18 indicates new customers a message "Please wait until the ticket machine issue a new order ticket".

The customers at the tables will review the menu screen on the table top terminals 10 in order to select their desired dishes (step S7).

[0063]

The employee indicates on the table top terminal 10 that the customers are in a standby mode, using the PHS terminal 22. In addition, the employee urges the guide display 18 to issue a next order ticket via a wireless route e6, a wire route d1 in one roundtrip and a wireless route c2, using the PHS terminal 22.

If the employee cannot do the foregoing operation, the request for a next order ticket will be notified to the guide display 18, via a wireless route c3, wire route d1 in a roundtrip and wireless route c2 when the customers operate the table top terminal 10.

Further, the identification code of the table top terminal 10 is read from the terminal receptacle 12 via the route b2. The customers' orders and account will be processed on the basis of the identification code of the table top terminal 10.

[0064]

The table top terminals 10 are designed for enabling customers to enjoy games. If children wish to play games in step S8, a "Call" button will be touched to call an employee via the PHS terminal 22. A plurality of employees may be called in this case. The called employee answers and indicates "Please wait" on the table top terminal 10, using the PHS terminal 22, and checks which table is calling. The employee comes to the calling table, verifies the customers' wishes to play a game, and enables the use of a game machine.

[0065]

Even when any employee does not attend the table, the customers can operate the table top terminal 10 in order to select a method of payment, and specify necessity or non-necessity of receipts, kinds of menus, or a three-dimensional graphic menu, and so on in step S9.

The customers can select payment by cash, credit cards, electronic money cards, or portable phone settlement when leaving the restaurant.

[0066]

A plurality of menus are prepared according to kinds of customers, kinds of dishes, kinds of materials, and types of dishes. The menus are prepared for dishes suitable for senior citizens, those for young people, those for children, those for women, and those for housewives. The menus are classified into rich and plain dishes. The kinds of materials are fishes, meat, vegetables, salads, rice, and noodles. The types of dishes are Japanese dishes, Italian dishes, pizza, pasta, beverages, stew, and soup.

Calories, nutrients and so on of the respective dishes can be checked by the customers. It is also possible to calculate calories of ordered dishes and indicate them on the table top terminal 10.

The dishes can be also indicated by three-dimensional computer graphics if necessary.

The table top terminal 10 also indicates proposed delivery time of

ordered dishes, which are calculated on the number of dishes to be cooked and other factors.

A sum of currently ordered dishes is indicated on the table top terminal 10 on the real time basis.

The number of respective dishes which can be served to customers is stored in the service managing system beforehand. If the number of the dishes to be served comes near the specified value, a mark representative of possible sellout will be indicated. Then, a sellout mark will be displayed when there is no available dish.

[0067]

In step S10, the customer checks the last item of their orders. If there is no change or no omitted order, the order list and the sum of ordered dishes are compared. Then, the customer touches "Order" button on the table top terminal 10 in order to confirm the final order.

Data on the ordered dishes are transmitted to No. 1 to n kitchen terminals 16 in charge of the ordered dishes, via the wireless route c3, wire route d1, wire route d2, and wireless routes c12 and c13.

[0068]

The customers can select or operate the following items using the table top terminal 10:

a) re-order;
b) indication of weekly mini-information;
c) commercials;
d) answers to questionnaires;
e) playing games; and
f) challenging quizzes.

The customers can select commercials of adjacent stores or shops or general commercials.

When the questionnaires are selected, quality of dishes and offered service are indicated using comical images. Small gifts or discount of

service will be offered to answerers.

[0069]

Children can enjoy playing games when they agree with the games. The games will be charged or will be free. In the former case, fees will be indicated on the table top terminals 10.

When no date are input on the table top terminal 10 for a specified time period, the screen of the table top terminal 10 will become blank in order to save battery consumption. However, screens indicating re-orders, commercials, questionnaires, use of the game machine will be periodically displayed in a manner such that they are not uncomfortable to the customers. Further, the customers can request not to display any images.

[0070]

In step S11 shown in Fig. 6, a cook prepares a dish ordered on the kitchen terminal 16. At first, the ordered dish is indicated in red on the kitchen terminal 16. The cook specifies the ordered dish using the PHS terminal 22 via a wireless route c11, wire route d2 in two roundtrips, wireless routes c12 and c13, and wireless routes c8, c9 and c10, so that the dish being cooked is indicated in blue on the kitchen terminal 16, for example. When the dish is completed, the cook inputs the completion using the PHS terminal 22. This information is transmitted to the kitchen terminals 16 and worktable terminals 15 via the wireless route c11, wire route d2, wireless routes c12 and c13, and wireless routes c8, c9 and c10. The information is indicated in white on the kitchen terminals 16 and worktable terminals 15. Further, the information is transmitted to the PHS terminals 22 of employees at the worktable, and is indicated on the table top terminal 10 via the wire route d1 and wireless route c4.

[0071]

The cook carries the completed dish to the worktable 14 via a route e3, and issues a delivery ready command on the PHS terminal 22 via the wireless route c11, wire route d2, and wireless routes c8, c9 and c10. Then,

the ordered and cooked dish is indicated in yellow on the worktable terminals 15, for example.

In this state, the store control unit 20 automatically looks for a free, or unoccupied, employee, and notifies delivery ready information to the PHS terminals 22 carried by the employees via the wire route d1 and wireless route c5.

[0072]

When observing the indication on the PHS terminal 22, the employee checks the cooked dish with reference to the specified dish and table number on the worktable terminal 15 in step S12. The employee receives the cooked dish via a route e2, and inputs data indicating delivery of the cooked dish on the worktable terminals 15 via a wireless route c6, wire route d1, wire route d2, wireless routes c8, c9 and c10, and wireless route c4. The dish under delivery is indicated in blue on the worktable terminals 15, and is also indicated on the table top terminal 10.

If an inexperienced employee cannot locate the table on the basis of the table number, he or she touches a particular position on the worktable terminal 15. Then, the destination of the cooked dish is indicated in a particular color.

[0073]

In step S13, the employee delivers the cooked dish to the destination via the route e4, and inputs the completion of delivery to the table top terminal 10. This information is transmitted from the PHS terminal 22 to the worktable terminal 15 via the wireless route c6, wire route d1, wire route d2, wireless routes c8, c9 and c10, and wireless route c4. The dish on the worktable terminal 15 is now indicated in green. Further, this is informed to the table top terminal 10.

It is possible to know whether or not all the ordered dishes have been delivered by observing color indications on the terminals.

[0074]

After dining, the customer touches a " Payment" button on the table top terminal 10 in order to have their accounts cast (step S14). The accounting unit 17 calculates the account via the wireless route c3, wire route d1, wire route d2, wireless route c15 and wireless route c5, and waits for the customers. At the same time, a free, or unoccupied, employee will be selected in order to inform that the customers wish to pay, on the PHS terminal 22. Then, the employee guides the customers to the casher. Information concerning payment by cash, credit card, electronic money and portable phone, and necessity of issuance of receipt is again confirmed, or specified again.

In this state, the customers are requested to check the method of payment, and confirmation data are transferred to the accounting unit 17. Then, a machine-made receipt or handwritten receipt will be issued. Information concerning the customer leaving the restaurant is notified to the employees carrying the PHS terminals 22.

[0075]

The customers advance to the casher via a route a6. In this state, the casher confirms by observing the accounting unit 17 the presence of the table top terminal 10 on the table terminal receptacle 12 on the table 11.

In step S15, the casher checks the table number, customers and account, and take steps for payment. When the account has been settled, the table top terminal 10 will be returned to a standby mode.

[0076]

The casher reviews various pieces of information indicated thereon, confirms answers to questionnaires, and updates the stored data. If no data have been input, data will be input.

A series of operations at the restaurant, e.g. arrival of customers, selection of menus, orders of dishes, delivery of cooked dishes and accounting, types of customers, and time required to serve the ordered dishes are computed and stored in the store control unit 20. The stored data are

controlled by POS control system or the like.

Further, the store control unit 20 provides the computed accounting data to the POS control unit, which processes the received accounting data. The processed data are transmitted to the head office at a totaling time everyday, and are collectively managed there.

Further, supply of food materials is also managed at the head office and is automatically notified to the branch offices using the network, taking conditions such as seasons, a day of the week and so on into consideration.

[0077]

After clearing the table, the employee checks the battery, and replaces another charged table top terminal 10 if a battery exchange mark is visible (step S16). Then, he or she places the table top terminal 10 on the table terminal receptacle 12, and checks whether or not the identification code of the table top terminal 10 is automatically input by directly operating the table top terminal 10 or using the PHS terminal 22. Thereafter, the employee sets "Table is ready for new customers" on the table top terminal 10 or PHS terminal 22 in order to notify this to the guide display 18 via the wireless route c6, wire route d1, wireless route c4 and wireless route c2.

The guide display 18 returns to the foregoing step S16 when there are new customers, or to the step S6 if there is no new customer.

[0078]

The invention has been described concerning the case where the customers use ordinary table seats. The invention is preferably applied to customers seated at the counter. The following describes the operation of the invention when it is applied to customers at the counter seats, with reference to Fig. 8. The operations which are common to the foregoing description are described in a simplified manner, and the operations particular to the counter are mainly referred to hereinafter.

[0079]

A customer reaches the guide display 18 via the route a1, and touches

an "Enter " button thereon. Then, the guide display 18 indicates a screen for selecting a table or counter. If the customer touches a "Counter" button, the display visually indicates the route to the counter 31 in order to guide him or her. At the same time, the guide display 18 notifies PHS terminals 22 that the customer is coming to the counter 31. In response to the notification, one of the employees operates the PHS terminal 22 in order to indicate that he or she will attend the customer. Then, the employee comes to the customer in order to attend the customer, via the route e1.

[0080]

The employee places an idle counter top terminal 30 on the counter terminal receptacle 32 on the counter 31, and operates the PHS terminal 22 in order to indicate that the customer is ready for ordering. This state is also notified to the store control unit 20 via a wireless route c14 and a wire route d1. The store control unit 20 performs various operations such as checking full state of tables.

[0081]

Even if no employee comes to attend the customer, he or she can operate the counter top terminal 30 in order to specify a method of payment, necessity or non-necessity of a receipt, and a desired menu.

Thereafter, the customer selects his or her desired dishes by viewing a number of menus.

Thereafter, visualized menus will be indicted, which enables the customers to select dishes with reference to calories, and their current account.

[0082]

The customer touches the "Order" button on the counter top terminal 30, and ordered menus are notified to a particular kitchen terminal 16 via the wireless route c3, wire route d1, wire route d2, and wireless route c12 and c13.

Thereafter, the customer can operate the counter top terminal 30 in

order to review commercials and topics, play games, or to order additional dishes.

[0083]

The cook in charge of the ordered dish starts to prepare it. At first, the ordered dish is indicated in red on the kitchen terminal 16, for example. When the cook enters the start of preparing the dish on the PHS terminal 22, this is informed to the kitchen terminal 16 via the wireless route c11, wire route d2, wireless routes c12 and c13, and wireless routes c8, c9 and c10, so that the red indication on the kitchen terminal 16 changes to blue, thereby indicating that the dish is being prepared.

When the cook enters completion of the dish on the PHS terminal 22, this is informed to the kitchen terminal 16 via the wireless route c11, wire route d2, wireless routes c12 and c13, and wireless routes c8, c9 and c10. Then, color indication of the ordered dish is changed to white from blue. The completion of the ordered dish is also informed to the counter top terminal 30 via the wire route d1 and wireless route c4.

[0084]

The cook brings the completed dish to the worktable 14, and operates the PHS terminal 22 in order to notify delivery ready state of the dish to the worktable terminal 15. On the worktable terminal 15, the color indication of the ordered dish is changed to yellow, for example. At the same time, the store control unit 20 automatically looks for a free, or unoccupied, employee. The delivery ready state is informed to the PHS terminal 22 of the free, or unoccupied, employee with preference via the wire route d1 and wireless route c5.

[0085]

The employee receives the prepared dish, and notifies the delivery of the dish to the counter top terminal 30 via the wireless route c6, wire route d1, wire route d2, wireless routes c8, c9 and c10, and wireless route c4. The color indication of the dish is changed to blue, for example, on the worktable

terminal 15.

After delivering the ordered dish to the customer at the counter 31, the employee inputs the end of delivery to the counter top terminal 30. The end of delivery is also informed to the worktable terminal 15 from the PHS terminal 22 via the wireless route c6, wire route d1, wire route d2, wireless routes c8, c9 and 10, and wireless route c4. The color indication of the dish is changed to green, for example, on the worktable terminal 15. Further, the counter top terminal 30 shows the end of delivery.

[0086]

The customer touches the "Accounting" button on the counter top terminal 32 when leaving the restaurant after the meal. Receiving the accounting request via the wireless route c3, wire route d1, wire route d2, wireless route c15, and wireless route c5, the accounting unit 17 performs accounting, and waits for the customer. At the same time, a free, or unoccupied, employee is called and is notified on the PHS terminal 22 to guide the customer to the casher. The customer pays in the same manner as that mentioned previously.

After clearing up the counter, the employee checks the valid period of the battery of the counter top terminal 30, replaces the counter top terminal 30 with a battery-charged counter top terminal 30 if necessary, places the counter top terminal 30 on the receptacle, confirms the standby state of the counter top terminal 30, and informs the guide display 18 of the availability of the counter seat.

The guide display 18 returns to the initial screen in order to serve for succeeding customers.

[0087]

The embodiment of the invention may be advantageous to the restaurant owner, for example, in the following respects:

a. an income may be increased because game fees can be collected;

b. fees for displaying commercials can be collected;

c. the customers' accounts can be automatically sent to the counting machine;

d. menus and various service information can be collectively updated or processed by the central control unit;

e. information concerning insufficient stock of materials or sellout dishes can be indicated when customers order their desired dishes; and

f. delivery of ordered dishes to customers can be easily notified by the PHS terminals, using the dedicated pen or touching the panel on the worktable terminal 15.

[0088]

The employees can know whether or not all the ordered dishes have been delivered to customers.

Delivery of the cooked dishes is notified by interrupting an existing screen image when touching the panel or using the dedicated pen. In other words, this delivery notification is indicated on the worktable terminals 15, by interrupting an existing screen image. Further, this notification is input by the PHS terminals 22 which are far from the worktable terminal 15.

Commercials sponsored by adjacent shops or stores may be indicated on the table or counter top terminals. Usually, the commercials are indicated as still images using image signals stored in a built-in memory. When existing images are updated, new image signals will be collectively transmitted to all the terminals from the CS units. It is possible to collect data concerning the number of customers observing the commercials, time period of the commercials, frequency of the commercials, and data on commercial reading. Commercial fees may be charged to sponsors on the basis of the foregoing data. Commercial fees may be used for rental fees of the service managing system of the invention.

In an emergency, customers can call employees using the table or counter top terminals. The employees can check where the emergency call

is originated. It is possible to indicate on a large screen the table from which the emergency call has been originated.

[0089]

The present invention is further advantageous in the following respects:

a. the terminals can remain active during business hours when they are charged once everyday; and

b. the terminals are water-tight and protected against bacteria.

The charged terminals are continuously usable for longer than 15 hours. When the restaurant is closed, the terminals may be charged by the battery chargers 23.

A table top terminal 10 whose battery is run down will be promptly replaced with a charged table top terminal 10. The identification number of the used table top terminal 10 will remain active until the new table top terminal is placed thereon. Therefore, when placing the new table top terminal 10 on the table terminal receptacle 12, the employee calls the new table top terminal 10 using the PHS terminal 22 in order to check whether the new table top terminal 10 reads the identification code of the table terminal receptacle 12 and shows it correctly.

If many customers come as one group and tables are linked, account of a plurality of table or counter top terminals 10 or 30 can be processed in bulk if requested.

[0090]

The service managing system of the invention is applicable not only to ordinary eating houses but also to the following locations.

(1) Take-out lunch stores where customers operate menu input terminals in front of the store and order desired items. A kitchen terminal and an accounting unit are operated in response to the operation of the foregoing menu input terminals.

(2) Fast food stores such as hamburger shops where employees also

carry menu input terminals in order to quickly meet customers' orders. The employees' menu input terminals are provided with accounting units as an integral part.

(3) Drive-through type bookstores where terminals are chained to a store building so that drivers can operate the terminals and order desired book.

(4) Eating houses in railway stations or the like where menu input terminals may be installed in vending machines. Data are transmitted to kitchen terminals which also function as an accounting unit.

(5) Lunch catering stores where since no radio communication is used, ordered food is transmitted by a radio communication network and is visually displayed.

(6) Karaoke houses where a service managing system displays vacant rooms, manages customers' orders, and settles customers' accounts.

Since no new wiring is necessary for installing the service managing system, the foregoing facilities may be newly made or hotel facilities may be reformed at a reduced cost.

[0091]

Terminals in a waiting room or those on particular tables may be connected to TV networks or CATV networks in order to view TV or CATV programs.

[0092]

[Advantages of the Invention]

The service managing system is advantageous as follows.

(1) Since the terminals are of cordless type, customers can take the terminals in their hands similarly to ordinary menus, and can review menu information easily in a joyful manner.

If necessary, the menus can be offered as three-dimensional computer graphics, customers can review them as if they observe actual dishes, which is effective in attracting more customers.

(2) This system uses PHS so that customers can get easy access to employees.

(3) This system can update information such as menus, mini-information, broadcasting commercials, game and quizzes from the central processing unit.

[0093]

(4) When connected to the POS system, the head office and branch offices can exchange information common to them and information related to stores in each area, and can quickly and simultaneously update image information.

(5) This system manages all the tables. The guide display is provided at the entrance of the restaurant or the like, and visually informs customers of availability of usable tables, time for them to be seated and so on. The guide display guides the customers to usable tables.

(6) When a customer operates the table top terminal in order to temporarily settle an account, this is notified to a terminal of a free, or unoccupied, employee via PHS. Then, the customer's account is transferred to the accounting section, which enables the customer to pay without delay. This is effective in saving employee's efforts to take orders, and in reducing the number of employees.

[0094]

(7) Since customers' orders are indicated in accordance with their order time, problems that orders are treated in an arbitrary order can be prevented.

(8) The number of the CS wireless terminals can be determined on the basis the scale of the store, the number of table top terminals, and use of such terminals, so that the number of communication channels can be increased or decreased accordingly. This is effective in serving customers without delay for reasons of the restaurant.

(9) It is easy to obtain information on kinds of customers, requests on

dishes to be served and so on. Such information is useful when making changes in the restaurant or the like in order to improve an atmosphere thereof.

[0095]

No print slips are necessary since ordered dishes are confirmed by touching indications on the kitchen terminal, or dishes being cooked or already cooked dishes can be indicated by operating the PHS terminals.

(11) The overall operation of the restaurant or the like can be automatically controlled on the basis of information concerning the dishes to be served daily. Information on probable out-of-stock dishes can be notified to all of the table top terminals when the dish in question is ordered by the last customer.

Even if dishes or goods cannot be offered in an emergency, this is entered in the service managing system from the kitchen terminals. Therefore, such information is simultaneously notified to all of the terminals. If there is any inconvenience, the foregoing situation will be indicated on the displays, or apologies will be verbally notified to the customers.

[0096]

(12) When some customers feel troublesome to operate table or counter top terminals, or do not want to understand how to operate them the employee can receive their orders with the customers reviewing them on the employee's terminal. Therefore, order errors can be prevented, so that the service managing system can be utilized without any problem.

(13) When proposed delivery of cooked dish is input on the worktable terminal, this is displayed in a different color on the table top terminal where the cooked dish should be delivered. Then, completion of dish delivery is input on the table top terminal, and this is indicated on the worktable terminal in a different color. Therefore, it is possible to prevent delivery of dish to wrong destinations.

(14) The guide display guides customers to available, or unoccupied,

tables. The customers can order their desired dishes using table or counter top terminals. The ordered dishes are indicated on the worktable terminals, and will be cooked. The cooked dishes will be delivered to the customer. Further, the customer's account will be handled in response to the foregoing operations. The service managing system allows smooth service operations. The employees assigned to respective sections in the restaurant and so on can work in response to the information displayed on their terminals. The service managing system allows efficient and quick services to offered to the customers and to reduce errors.

[0097]

(15) The employees can respond to orders originated by customers at tables outside the restaurant. The service managing system is effectively used in saloons and restaurants having compartments.

(16) In future, it is expected that cooking processes will be accelerated in response to technical advancement of frozen materials, so that usability of the service managing system of the invention will be further increased. Therefore, cooking, delivery of cooked dishes, and cleaning of tables will be carried in an optimum manner when these works are performed in cooperation, which will lead to increase of sales.

(17) The employees can quickly guide customers to available, or unoccupied, tables in response to the information on the guide display panel, or the information displayed on the PHS terminal.

[0098]

(18) It is possible to know which employee operates his or her terminal. This is advantageous in the following respects.

It is possible to select a free or unoccupied employee and give instructions to him or her. The employees can serve customers without any loss time and delay, which will keep customers from feeling irritated. Therefore, the restaurant or the like will be able to pull in more customers.

The service managing system performs automatic consultation on

the number of regular employees, part timers and so on based on automatic confirmation of a turnover rate, and issues useful suggestions.

All of the operations of the restaurant or the like are automated, and overall work flow will be made up as data.

The names and times of the employees operating the terminals will be recorded, and will be transmitted to the store control unit. The recorded data will be made up, be indicated on the POS control unit, and be transmitted to the headquarter or head office.

It is possible to review whether or not the restaurant or the like properly carries out its business or to find out problems therein, and to quickly overcome the problems. Further, the data will be useful to performance evaluation of the employees.

[0099]

(19) The PHS terminals are of wireless type, and operate on the PHS waves, consume little power, and assure reliable performance.

(20) The terminals are cordless, and do not require any AC power.

(21) When a customer operates the table top terminal in order to temporarily settle an account, this is notified to a terminal of a free, or unoccupied, employee via PHS. Then, the customer's account is transferred to the accounting section, which enables the customer to pay without delay.

(22) The number of CS wireless terminals is determined on the basis of the scale of the restaurant or the like, the number and use of table or counter top terminals, so that it is possible to increase or decrease the number of communication channels. Therefore, the customers will be served without any delay due to the operation state of the service managing system.

(23) The employees can guide customers in accordance with the indications on the guide display panel without looking for unoccupied tables. Further, the indications on the guide display are also indicated on the employees' PHS terminals.

[0100]

(24) It is possible to select a free or unoccupied employee and give instructions to him or her. The employees can serve customers without any loss time and delay, which will keep customers from feeling irritated. Therefore, the restaurant or the like will be able to pull in more customers.

The service managing system performs automatic consultation on the number of regular employees, part timers and so on based on automatic confirmation of a turnover rate, and issues useful suggestions.

All of the operations of the restaurant or the like are automated, and overall work flow will be made up as data.

The names and times of the employees operating the terminals will be recorded, and will be transmitted to the store control unit. The recorded data will be made up, be indicated on the POS control unit, and be transmitted to the headquarter or head office.

It is possible to review whether or not the restaurant or the like properly carries out its business or to find out problems therein, and to quickly overcome the problems. Further, the data will be useful to performance evaluation of the employees.

[Brief Description of the Drawings]

Fig. 1 is a view showing the concept of a service managing system of the invention.

Fig. 2 is a block diagram showing the configuration of a store control unit in a branch office.

Fig. 3 is a block diagram showing the configuration of a terminal.

Fig. 4 is a block diagram showing the configuration of an accounting unit.

Fig. 5 is a flowchart of operations of the service managing system.

Fig. 6 is a continuation of Fig. 5.

Fig. 7 is a schematic view showing routes for transmitting and receiving signals.

Fig. 8 is a schematic view showing further routes for transmitting and receiving signals.

[Description of Reference Numbers]

10 Table top terminal

11 Table

12 Table terminal receptacle

15 Worktable terminal

16 Kitchen terminal

17 Accounting unit

18 Guide display

19 Order ticket machine

20 Store control unit

22 PHS terminal

23 Centralized battery charging stand

30 Counter top terminal

31 Counter

32 Counter terminal receptacle

[Abstract]

[Problems to be Solved]

To provide a service managing system in which all of data are transferred between terminals and devices on the wireless basis without using AC power. The terminals are operated by battery and are portable. The service managing system controls reception of orders from customers, serving the customers, cooking of ordered dishes, delivery of cooked dishes, and accounting of the ordered dishes.

[Means of Solution]

A service managing system includes: table top terminals 10 enabling customers to view contents of service items and to order desired items, and being portable and driven by a battery; kitchen terminals 16 receiving and indicating orders from the table top terminals 10; an accounting unit 17 casting accounts in response to a customer's request and indicating a calculated result; and a store control unit 20 processing data between the table top terminals, kitchen terminals and an accounting unit. In the system, data are transmitted and received using radio communications between the table top terminals, kitchen terminals, accounting unit and control unit.

[Reference Drawing] Fig. 1

[Drawings]

Fig. 1

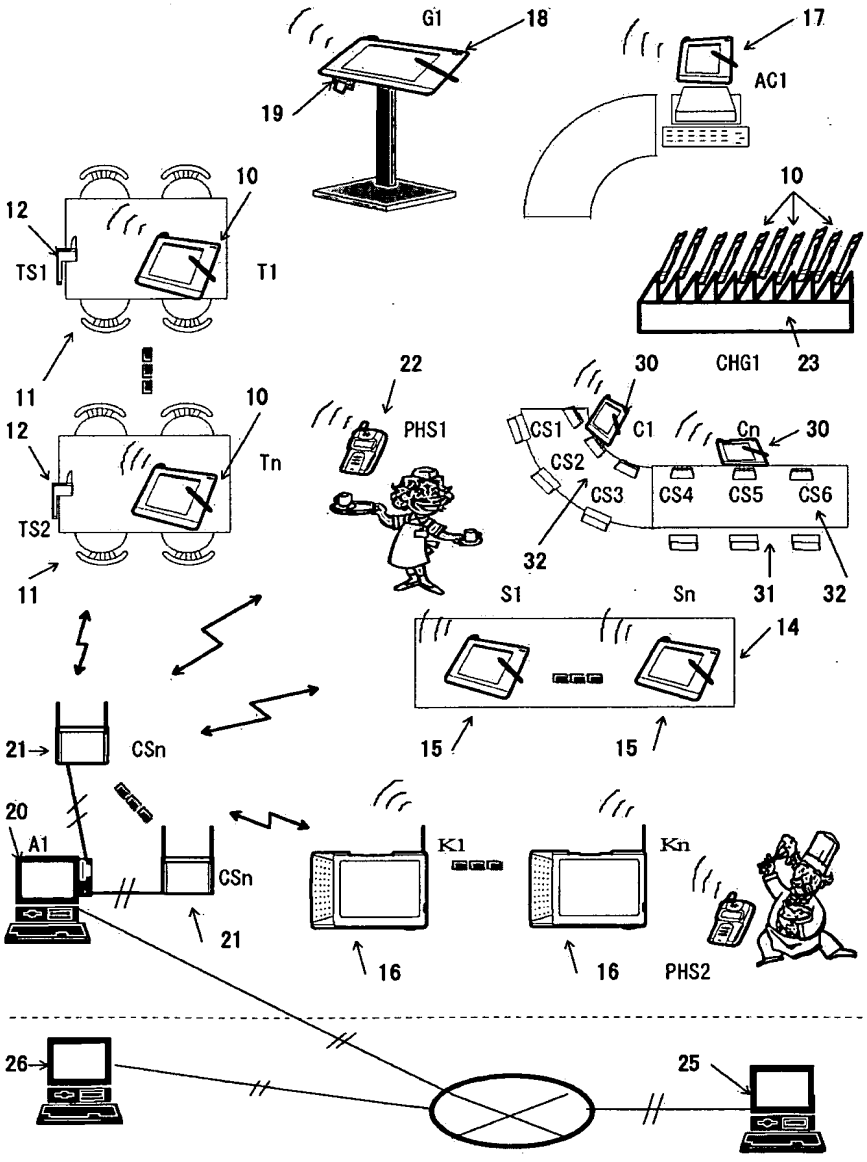

Fig. 2

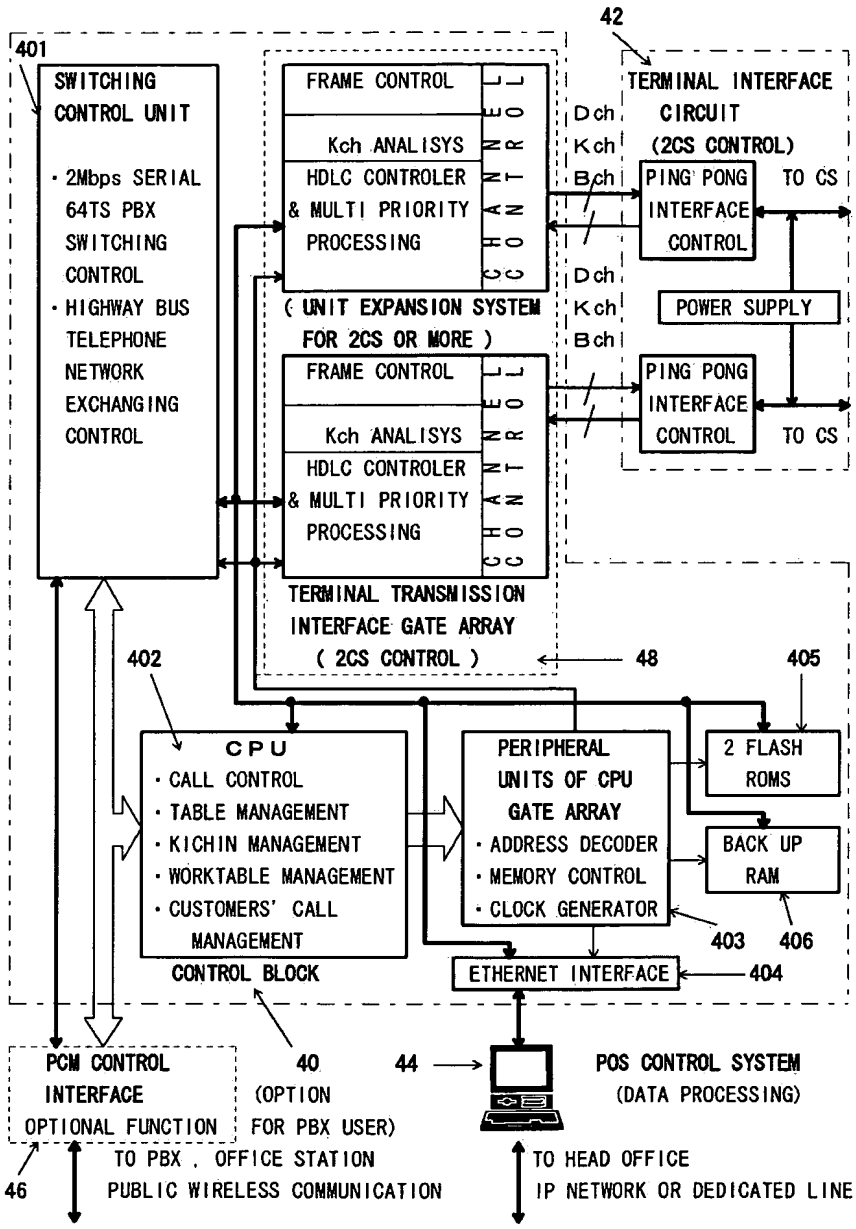

Fig. 3

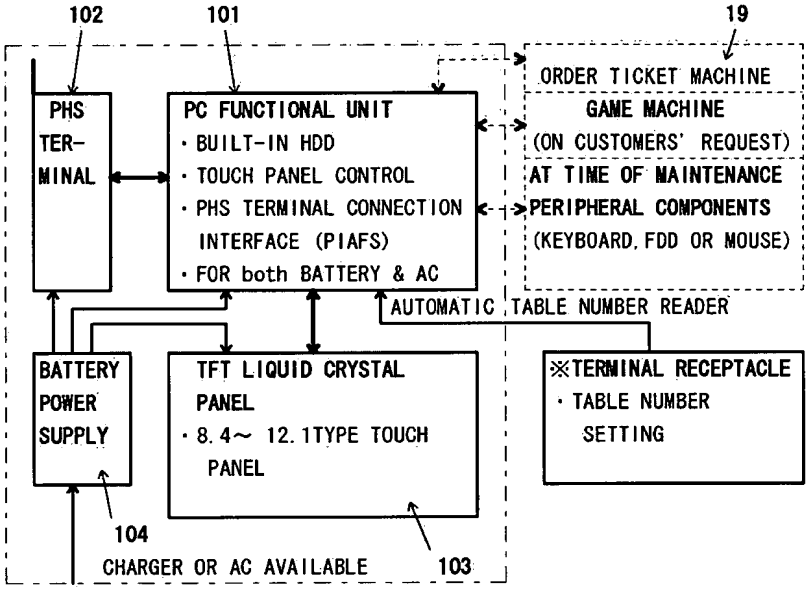

Fig. 4

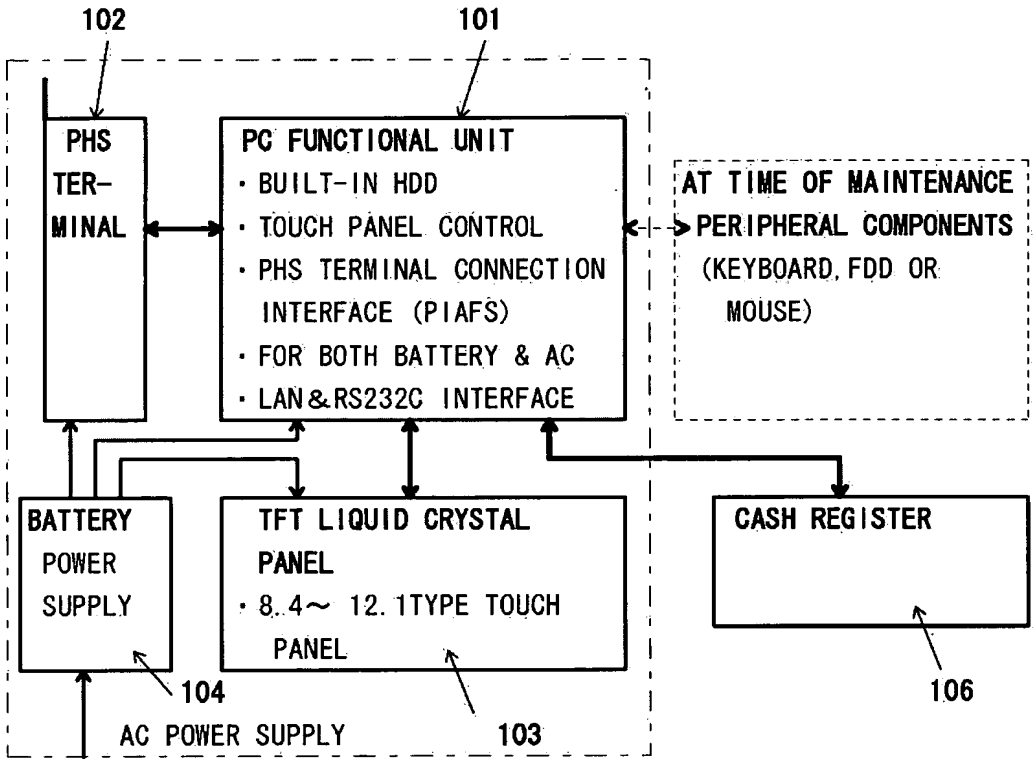

Fig. 5

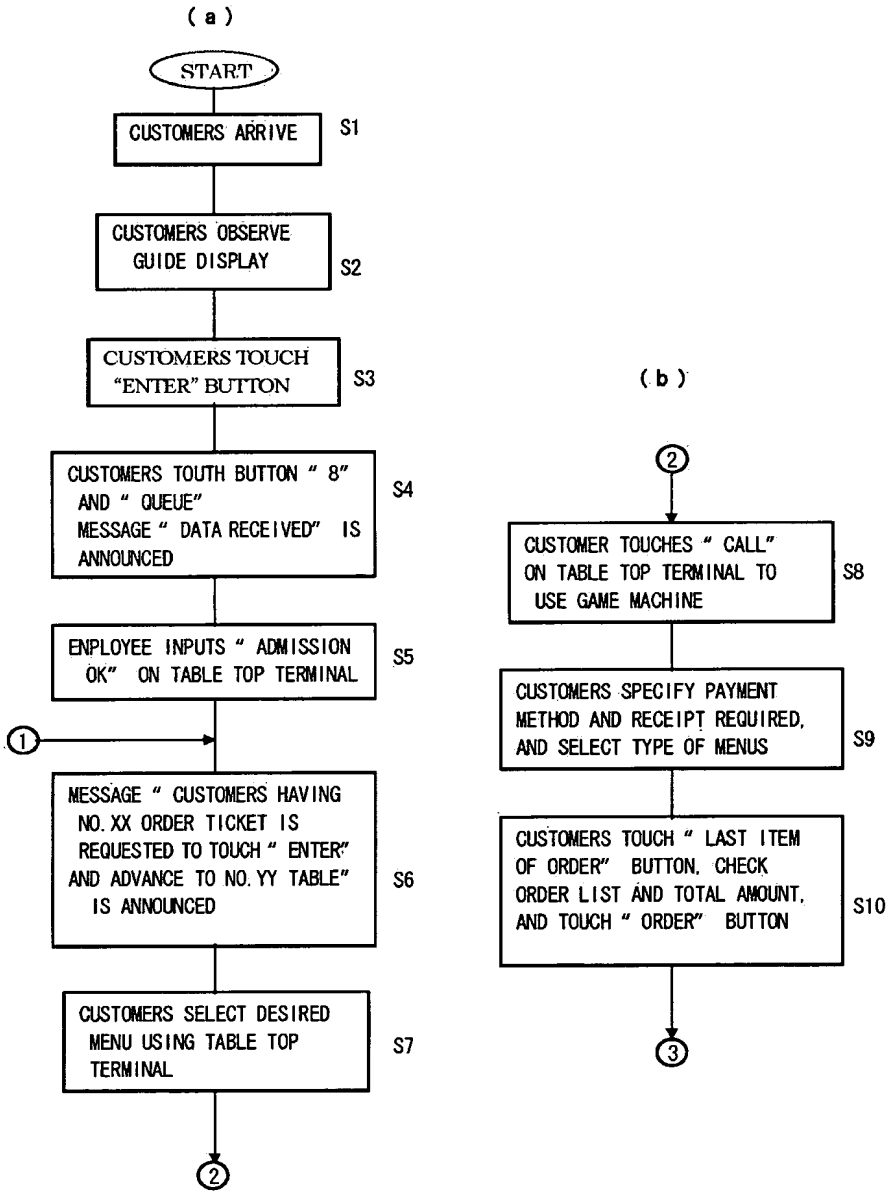

Fig. 6

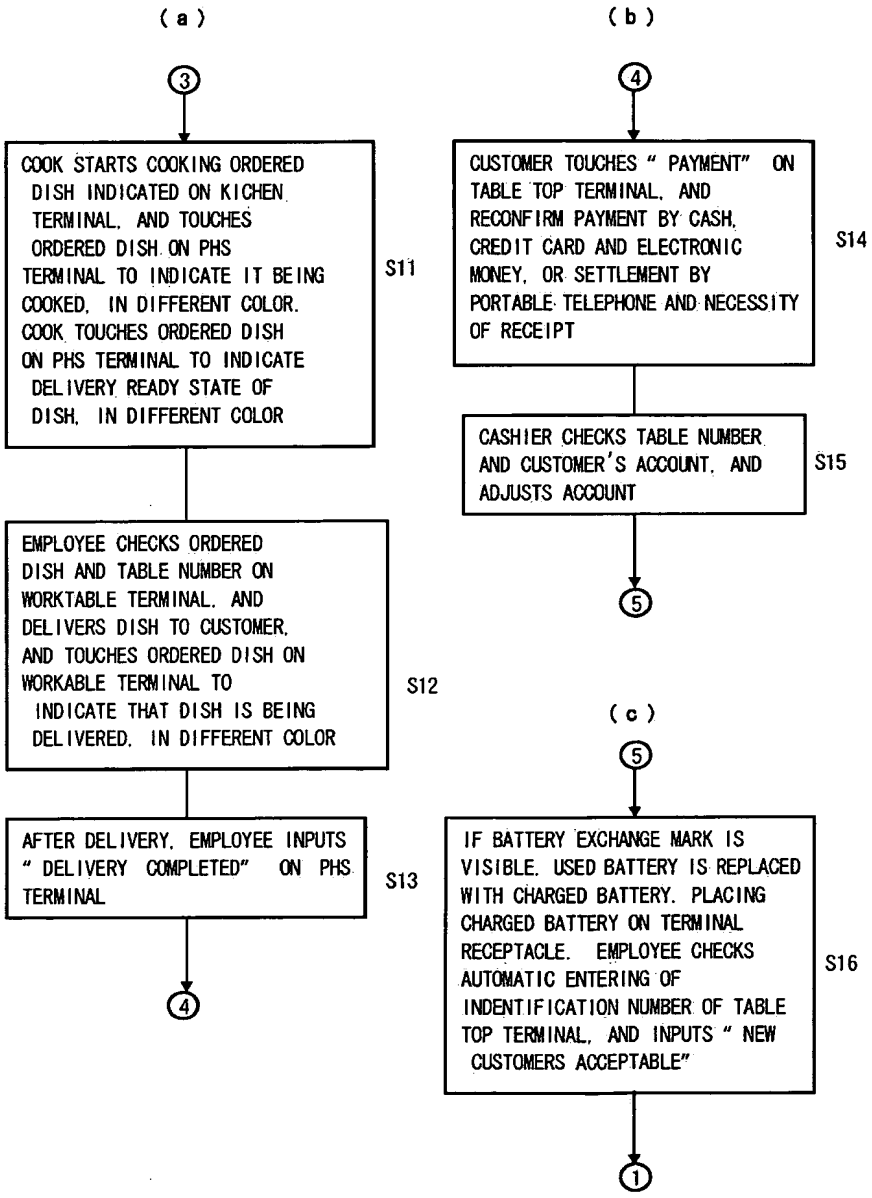

Fig. 7

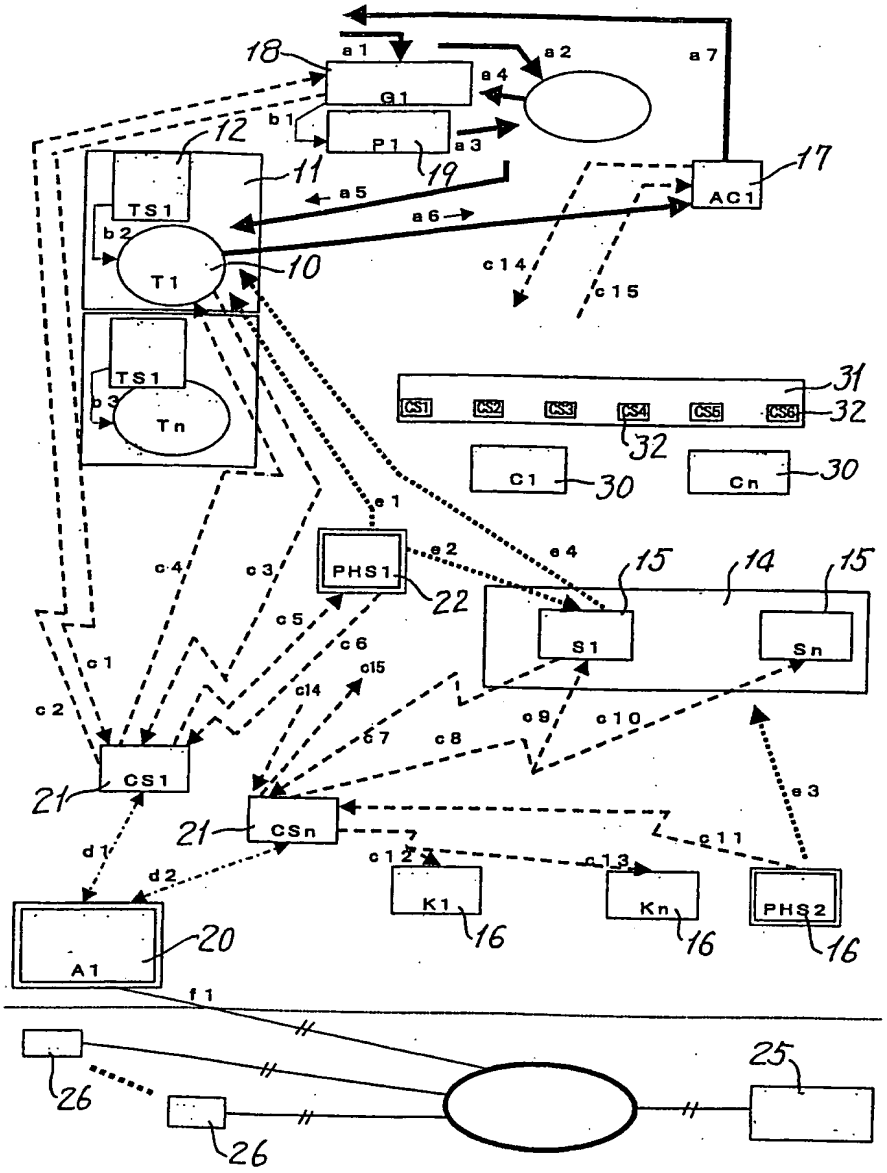

Fig. 8